European Education Area
Strategic Framework

Working Group on Schools, Sub-group on Pathways to School Success

Formative assessment and inclusion - bibliography

Search term	Source	Summary description
EC definition of inclusion in school education	European Pillar of Social Rights 2017, booklet available here	The first principle of the European Pillar of social rights underlines that: 'Everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market'. Inclusion of people with disabilities (17th principle) People with disabilities have the right to income support that (…) ensures services that enable them to participate in the labour market and in society (…)
	Council of the European Union, Conclusions on Inclusion in Diversity to achieve a High-Quality Education for All. Brussels: 17th February 2017, available here	inclusive education should be: available and accessible to all learners of all ages, including those facing challenges, such as those with special needs or who have a disability, those originating from disadvantaged socio-economic backgrounds, migrant backgrounds or geographically depressed areas or war-torn zones, regardless of sex, racial or ethnic origin, religion of belief, disability, age or sexual orientation.
	European Parliament, Inclusive education for learners with disabilities, 2017, available here	Inclusive education aims to promote citizenship and the common values of human rights, freedom, tolerance and non-discrimination through education. It builds on innovative approaches and practices developed for the education of people with disabilities to design effective and equitable education systems for all learners in a lifelong perspective covering all aspects of education
	ET2020 Working Groups	Inclusive education aims to allow all learners to achieve their full potential by providing good quality education to all in mainstream settings with special attention to learners at risk of exclusion and underachievement by actively seeking out to support them and responding flexibly to the circumstances

		and needs of all learners, including through individualised approaches, targeted support and cooperation with the families and local communities.
Assessment in the framework of Pathways to School Success	European Commission, Staff Working Document: Pathways to School Success, 2022, available on EU Publications (Pathways to school success - Publications Office of the EU (europa.eu))	See p. 92 onwards on "Assessment"
EC definition of formative assessment	European Commission, Staff Working Document: Assessment of Key Competences in initial education and training: Policy Guidance SWD(2012) 371 final, available here	formative assessment, which means assessment for the purpose of helping learners develop their key competences.
Definition of formative assessment in further academia/sources	European Commission, Directorate-General for Education, Youth, Sport and Culture, Prospective report on the future of assessment in primary and secondary education, Publications Office, 2020,	Key definition on p. 19-22
	NESET, Assessment practices for 21st century learning: review of evidence	Formative assessment, also often referred to as Assessment for Learning (AfL), has been defined as 'activities undertaken by teachers — and by their students in assessing themselves— that provide information to be used as feedback to modify teaching and learning activities. Such assessment becomes formative assessment when

	Analytical report, 2017, available here	the evidence is actually used to adapt the teaching to meet student needs' (Black and William, (1998a). 'Assessment and Classroom Learning', Assessment in Education: Principles, Policy & Practice, 5 (1), 7–74).
	KeyCoNet, Key Competence Development in School Education in Europe, KeyCoNet's review of the literature, 2012	See ch. 6 "Assesseng key competences" http://keyconet.eun.org/c/document_library/get_file?uuid=3a7a093c-4c8f-473c-8702-f38ed86bb730&groupId=11028
	Formative assessment for mathematics teaching and learning website available here	The FA is connected with a concept of learning according to which all students are able to acquire, at an adequate level, the basic skills of a discipline. The learning passes through the use of teaching methodologies which can respond effectively to different learning time for each student, their different learning styles, their zones of proximal development.
	Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment [journal article]. Educational Assessment, Evaluation and Accountability (formerly: Journal of Personnel evaluation in Education), 21(1), 40. Available here	Black and William (2009, p. 9) define assessment as being formative "…to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited."
	Wiliam, D., & Leahy, S. (2015). Embedding Formative Assessment: Practical Techniques for K-12 Classrooms. Learning Sciences	Little consensus as to what formative assessments mean. People do and will continue to use the term in whatever way suits them. There is little value in trying to define it in a restrictive way that includes a usage with which people may disagree. What is valuable is to understand the differences in the way that people use the term.

	International. Available here	
	Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. Assessment in Education: principles, policy, & practice, 25(6), 551-575. Abstract available here	Where the inferences refer to the status of the student, or about their future potential, then the assessment is functioning summatively. Where the inferences relate to the kinds of activities that would best help the student to learn, then the assessment is functioning formatively (p.553)
	Looney, J., 2019, Digital formative assessment: A review of the literature, available here	Interpretations of formative assessment can vary across countries and education cultures
	UK Assessment Reform Group 2002 Assessment for learning: Ten principles., available here	[Formative assessment] …is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there. (ARG 2002, p. 1)
EC Online resources	School Education Gateway	Article: Formative assessment, assessment for learning, and all that jazz (schooleducationgateway.eu) Webinar: Formative assessment: from theory to practice (schooleducationgateway.eu) Resources: Lesson plans utilising formative assessment (schooleducationgateway.eu) Practice examples: Formative assessment gives your lessons staying power (schooleducationgateway.eu)
Formative assessment and special education	Yan, Z., Xiao, Y., Sin, K-F., Yang, L. and Guo, W-Y., Formative Assessment Practices in	While formative assessment is recognised as a powerful strategy to improve student learning in mainstream education, less is known about its use in special schools. This study investigates how teachers' Personal Practice Assessment Theories (PPATs) affect their formative assessment practices in the special school context with the support of e-books. A case study was conducted with three Chinese

	Special School Classrooms with the Support of E-Books: A Case Study, 27 July 2021, available here	teachers working with lower primary students who exhibit mild levels of intellectual disability. Data were collected through classroom observations and interviews. The findings reveal that the interaction between teachers' PPATs and the use of e-books affect teachers assessment goals, and the way they elicit, interpret and respond to assessment information. This study contributes to the understanding of how e-learning technology can be used to facilitate meaningful formative assessment in the special education context.
	NESET, A formative, inclusive, whole-school approach to the assessment of social and emotional education in the EU: Analytical report, 2021, available here	This analytical report seeks to address the evident gap in the formative assessment of social and emotional education (SEE) by providing a framework indicating how social and emotional education may be assessed through a whole-school approach, both at individual (learner) and contextual (classroom climate and whole school system) levels, accompanied by illustrations of how this may be carried out in schools. It presents a framework of guiding principles for the formative assessment of social and emotional education within the EU, and provides various tools that may be used to formatively assess social and emotional education at the levels of the individual learner, classroom climate and whole-school system. The report also identifies a number of areas that need to be addressed in order to advance the effective implementation of the formative assessment of social and emotional education in the EU. This report should serve as a platform for the development of a formative, collaborative, systemic and inclusive European identity for SEE assessment, in contrast with other individualistic, personality- and character-based, and normative modes of assessment. It also provides a more integrated framework for the assessment of SEE in the EU and helps to bring greater consistency to assessment practices for this key competence at regional, national and European levels. Webinar "Social and emotional education in the EU" 2022 Social and Emotional Education in the EU (schooleducationgateway.eu). The webinar discussed the role social and emotional competences play in the mental well-being of young people and how this can be implemented and assessed across the EU
	Leber, J., Birta-Szekely, N, Dawson .L, et al, Re-assessing the current assessment practice of children with special education needs in Europe, Sage Online Journals, Volume 33	This article reports the results of the European 'DAFFODIL'' (Dynamic Assessment of Functioning and Oriented at Development and Inclusive Learning) Project on the question of how functional and learning assessment systems facilitate or inhibit participation of children with developmental difficulties in inclusive education. Questionnaires were sent to medical, psychological, educational professionals, and parents in Sweden, Portugal, Hungary, Belgium, Romania, Norway, and the Virgin Islands. Interviews and focus groups were organized. Results (95%) showed that static standardized psychometric tests of intellectual, behavioural, and language functioning were mainly used, with the WISC-III being the most frequent test applied. Less than 5% of the 166 professionals in our sample used formative assessment and contextual observation to reveal learning or developmental potential in a process-oriented way.

	Issue 1:2011, abstract available here	Experts were generally not satisfied with current assessment practices. Reported weaknesses included lack of time, human resources, materials, cooperation, and follow-up. Assessment practice was mainly used to determine whether a child should be placed in a special needs programme, a special school, or an institutional setting, depending on whether a country has inclusive education practice or not. Parents were satisfied with static functional assessment when its purpose was to obtain disability benefits (financial, special education resources, recognition), but were unhappy with the negative outlook of reports. The main complaint of teachers and parents was about the poverty of recommendations on how to work with the child. The conclusion is that the current practice of standardized psychometric testing seems to contribute to barriers to learning if it is used in a deterministic or predictive way. In this regard, dynamic and functional assessment methods that are qualitatively oriented seem promising in addressing the issues of learning and development in a different way. The methods also contribute to an understanding of the child's needs in learning and development. However, interpretation and communication of assessment results in a way that emphasizes a more adequate and challenging educational intervention for the child seems to be central.
	Andersson, C. (2020). Formative assessment – from the view of special education teachers in mathematics. Nordic Studies in Mathematics Education, 25(3-4), 73–93. Available here	The potential of using formative assessment is well demonstrated, but **studies about the use of formative assessment from a special education perspective are lacking.** This study adds to this gap by investigating the view of formative assessment in a group of 39 special education teachers in mathematics (SETMs) who had learned about formative assessment within the SETM-program 2–6 years earlier. Five respondent interviews were used to design a questionnaire answered by the rest of the group. The SETMs had perceived formative assessment beneficial and useful in all their common sub-responsibilities and reported experiences of benefits as well as challenges. The article discusses the importance of reaching an inclusive formative assessment practice in mathematics education.
	Aidonopoulou-Read, T., The conceptualisation of a modified formative assessment model for non-verbal students with autism and severe learning difficulties, 2019, British Journal of Special Education available here	The popularity of formative assessment has increased since the publication of work by Black and William in 1998. Even though it is a useful teaching tool, in most cases it has only been possible to use it for students with high levels of cognitive and communicative ability. The aim of this article is to propose a modified, personalisable model of formative assessment for non-verbal students with autism and severe learning difficulties. Five students with autism and severe learning difficulties participated in systematic video observations over a period of eight weeks, during which student behaviour and attainment were recorded. The behaviour checklist gave an accurate representation of the students' level of engagement and predicted attainment, but differences in passive learning objectives (those requiring passive cooperation) and active ones (those requiring active contribution) were noted. The introduction of engaging resources improved engagement, but tangible rewards had a negative effect on attainment. Praise had a positive effect on engagement and attainment.

	Bottge, B., Ma, X., Graveil, M., Effects of Formative Assessment Strategies on the Fractions Computation Skills of Students with Disabilities, 19 August 2020, SAGE Journals Online, Vol 42 Issue 5, abstract available here	Learning to compute with fractions is a major challenge for many students and especially for students with disabilities (SWD). Phase 1 of this study employed a randomized pre-test–post-test comparison design to test the effects of two versions of formative assessment combined with an instructional program called Fractions at Work. In one condition, teachers used technology-assisted prompts to assess student performance and remediate errors. In the comparison condition, teachers gave students the same items for assessing progress but used their own methods of reteaching. Results indicated no difference between the two methods. However, pre-test-to-post-test gain scores were significantly higher on all three measures regardless of type of formative assessment, and students maintained much of what they had learned. Phase 2 examined issues related to instructional dosage. Students who received additional weeks of instruction scored significantly higher than students who went back to their business-as-usual curriculum.
Formative assessment and inclusion	Ravet, J., Delving deeper into the black box: formative assessment, inclusion and learners on the autism spectrum, International Journal of Inclusive Education, Vol 17, 2013- Issue 9, abstract available here	This paper explores the implementation of formative assessment through the 'autism lens' in order to analyse why the process can be exclusionary for some learners on the autism spectrum. The central thesis of the paper is that, where teachers have no understanding of the autism learning style, they are likely to revert to a normative, 'majoritarian' construction of learning. Two problems may flow from this. First, majoritarian assumptions about learning could dominate the inferential process that is the foundation stone of formative assessment. This could lead teachers to mis-read what is going on inside the heads of learners on the autism spectrum, and cause them to make partial and inaccurate inferences about their learning. Second, majoritarian assumptions may also inform the interactive process that underpins formative assessment. Social interaction can be challenging for learners on the autism spectrum and can limit or exclude their participation unless sensitive modifications are made to the social and communication environment. The case is, therefore, made for teacher awareness of a 'minoritarian' perspective that foregrounds knowledge and understanding of the autism learning style. Arguably, this knowledge and understanding could enable teachers to adapt the formative assessment process so that it is more effective and inclusive for this group of learners.
	Finnegan, Lisa A.; Miller, Katie M.; Randolph, Kathleen M.; and Bielskus-Barone, Kristina D. (2019) "Supporting Student Knowledge Using Formative Assessment	This article demonstrates an approach for teachers to use outcomes from activities using the universal design for learning expression principle to evaluate student knowledge in content areas. Based on the student's level of explanation using a variety of expression methods, teachers can determine whether students need additional support for re-teaching a concept or whether students are ready for additional practice or challenge. Various levels of technology can be used for formatively assessing student understanding, from no technology (e.g., paper and pencil) to mid- or high-technology tools found in most classrooms, including computers and tablets.

	and Universal Design for Learning Expression," The Journal of Special Education Apprenticeship: Vol. 8: No. 2, Article 7. Available here	
	Florian, L & Beaton, M., Inclusive pedagogy in action: getting it right for every child, International Journal of Inclusive Education, Vol 22, 2018- Issue 8, abstract available here	A key assumption underpinning formative assessment strategies is that individual pupils must be fully involved in the process. While such engagement and attention on the individual is important, studies suggest that teachers do not always readily engage with formative assessment as a reciprocal process which involves pupils. Additionally, a focus on individual differences between pupils can be problematic if the work that is set for some is differentiated to such an extent that they are not able to participate in classroom activities with others. Inclusive pedagogy is an approach to teaching and learning that attends to individual differences between pupils but avoids the marginalisation that can occur when pedagogical responses are designed only with individual needs in mind. Using participant observation and video footage from three classrooms that captured 'learning moments' identified by teachers and pupils, this study documents how the professional craft knowledge of teachers develops as they learn to use what their pupils have to say about learning in the context of whole class teaching. By concentrating on the findings from one site, this paper shows how teachers can use what they learn from listening to pupils' self-assessments of their learning in ways that meet the standard of inclusive pedagogy.
	Huisman, M., Formative Assessment and the Impact on Student Learning, NW Commons 5-2018, available here	The objective of this action research project was to examine the impact that formative assessment has on student learning. These formative assessment techniques were used in a general education environment with eighty-nine students. Data collection took place over the course of a three-month time period with both quantitative and qualitative techniques. These techniques were summative assessment scores as well as a student survey. Analysis of the overall data shows that formative assessment methods that are used in the classroom positively impacts student learning.
	Negro, S.A., Hooks, S.D., Cornelius, K, et al, Whole-Group Response Strategies to Promote Student Engagement in Inclusive Classrooms,	Students with learning disabilities are often educated in inclusive classrooms alongside their typically developing peers. Although differentiated small-group instruction is ideal for students with learning disabilities, whole-group instruction continues to be the predominant instructional model in inclusive classrooms. This can create major challenges for teachers as they aim to actively engage all students, including students with learning disabilities. There are variations of whole-group response strategies,

	SAGE Journals Online, Vol 48 Issue 5, 2016, available here	however, that teachers can use to accommodate a range of individual student needs. Collecting formative assessment data during whole-group instruction also can inform instructional decision making.
	Ni Chorinin D. & Cosgrave, C., Implementing formative assessment in primary physical education: teacher perspectives and experiences, Physical Education and Sport Pedagogy, Volume 18, 2013- Issue 2, abstract available here	Purpose: To explore the impact of incorporating assessment into primary teachers' physical education practices on (a) their perspectives on assessment and (b) teaching and learning in primary physical education. Findings: The inclusion of assessment in physical education lessons provided structure and focus to the planning, teaching and learning processes and impacted positively on both teacher learning and the children's learning. The assessment strategies focused the learners, allowed for feedback related to assessment criteria and informed future planning. Challenges for the teachers included the amount of time needed to plan, difficulty in accessing sample assessments and differentiating assessments for different class levels and abilities. Conclusion: The use of assessment strategies enhanced the quality of teaching and learning in physical education and impacted positively on the teachers' and learners' perceptions of physical education. The importance of supporting teachers, through provision of information on assessment strategies and samples of assessment strategies aligned with content in physical education to enhance their everyday practice, is highlighted.
Formative assessment and problem-based learning	Butler, Mark D., "The effects of embedding formative assessment measures in a problem-based learning mathematics curriculum for middle school students" (2014). Theses and Dissertations--Early Childhood, Special Education, and Counselor Education. 11. Available here	Problem-based learning (PBL) is a promising methodology for engaging and motivating students' learning while increasing their maths skills. Enhanced Anchored Instruction (EAI) is a form of problem-based learning, rooted in a constructivist framework, which guides students through complex problems through video anchors and context rich environments that has been shown to significantly improve maths performance of SWD. Assessing student performance during PBL units is often difficult. Formative assessments supplement curriculum by allowing teachers to gather information and assess student learning during the course of instruction. However, despite the rise in formative assessment use, the effects of formative assessment in PBL curricula are rarely addressed. This study examined the effect of embedding formative assessments in the EAI curriculum on academic outcomes in middle school maths classrooms. Results showed that problem solving performance did not improve with the addition of formative assessment and gains on computation performance were mixed.
	Grob, R. , Holmeier, M. , & Labudde, P. (2017).	Inquiry-based education has been part of innovative science teaching for the last few decades. With the competence orientation now underlying many national curricula, one of the emerging questions is how

Formative assessment and inquiry-based learning	Formative Assessment to Support Students' Competences in Inquiry-Based Science Education. Interdisciplinary Journal of Problem-Based Learning, 11(2). Available here	the development of student competences can be fostered in the context of inquiry-based science education. One approach to supporting students in their learning is formative assessment, which is, however, not frequently used in a structured way in daily teaching practice. The aim of this study therefore is to explore what kinds of measures might support science teachers in implementing formative assessment activities in their inquiry-based education. For this, firstly, the challenges that occur on a classroom level when using formative assessment methods in inquiry-based science education from teachers' perspectives was investigated. Secondly, the teachers' suggestions on measures of support were analysed. Based on the respective results, this paper discusses implications for an implementation of structured formative assessment in inquiry-based science education to enhance student competences.
	Correia, C. & Harrison, C., 'Teachers' beliefs about inquiry-based learning and its impact on formative assessment practice, Research in Science & Technological Education, Volume 30, 2020- Issue 3, abstract available here	This study explores secondary science teachers' espoused beliefs about inquiry-based learning and the impact this has on their actual formative assessment practice in the classroom. The study involved two experienced science teachers. The findings show that teachers' beliefs about inquiry are consistent with how they teach and assess inquiry, and that the promotion of student autonomy is influenced by teacher beliefs. Teachers who position themselves as facilitators adopt more open guided inquiry approaches, while teachers who position themselves as 'shepherds' adopt more directed approaches to inquiry. This has important implications for students' autonomy and self-regulation in inquiry lessons.
	Grob, R., Holmeier, M., Labudde, P., (2015)Advantages and challenges of formative peer-assessment in inquiry-based education at primary school level, available here	In this study, peer-assessment as a method of formative assessment is trialled in the context of inquiry-based education in Swiss primary classrooms. The results suggest that teachers are able to integrate formative peer-assessment meaningfully in their inquiry teaching and that they see many advantages of it: they identify a number of mechanisms through which the students can benefit from peer-assessment, including two mechanisms that direct towards the concepts of self-regulated learning and motivation. The teachers also anticipated learning gains caused by the peer-assessment in a number of transversal competences. Besides these advantages, the teachers named various challenges related to the use of peer-assessment in inquiry units that are linked to judging the peers' achievements and to communicating about them. The Swiss teachers did not mention any challenges related to processing the feedback and deciding on the actions to be taken, though.
	Koksalan, S., Bekiroglu, F., Effects of Formative Assessment in Inquiry-	This research study aimed to investigate the effect of formative assessment used in inquiry-based instruction on 10th grade students' attitudes towards physics. For the study, a quasi-experimental with matching only pre-test-post-test control group research design was adopted. An answer was searched for

	Based Learning on High School Students' Attitudes towards Physics', The Eurasia Proceedings of Educational & Social Sciences, 2019, Volume 14, Pages 89-94, available here	the question "Is there a significant difference between the experimental group students who are exposed to formative assessment in inquiry-based instruction and the control group students who are not exposed to formative assessment in inquiry-based learning in terms of their attitudes towards physics?". The participants of the study consisted of 41 students in the 10th grade of a public high school in the spring semester of 2017-2018 academic years. In this study, "Physics-Related Attitudes Scale" was used as quantitative data collection tool. These were applied twice as pre-test and after a five- week treatment period as a post-test to both groups to assess and compare the effectiveness of formative assessment used in physics. Quantitative data collection tools were found to have high reliability. The effect size of the applications were large according to the calculations. When the data were analysed, a significant difference was found between the experimental group and the control group in favour of the experimental group in the final test of Physics-Related Attitudes Scale. The statistical results of the study show that formative assessment in inquiry-based instruction has a positive effect on students' attitudes towards physics course.
	Rokos, L., Samkova, L., (2020) Coding Classroom Talk from the Perspective of Formative Assessment and Inquiry-Based Education: A communication model for mathematics and science lessons, available here	In this contribution, the issue of coding classroom talk during lessons conducted in an inquiry-based manner was addressed. For this purpose, a joint communication model for coding formative assessment and inquiry-based education in the classroom was proposed. The proposed model is suitable both for mathematics and science education. They proceeded from the ESRU model devised for exploring informal formative assessment in inquiry-based science teaching and adapted it for a broader use. While the original ESRU model focuses on the on-the-fly teacher feedback during formative assessment, they modified it to focus on any classroom interactions during formative assessment and combined it with a schema for the process of inquiry. Such a combination allows visualising the interconnectedness of formative assessment and inquiry-based education as well as discerning the occurrences of the on-the-fly assessment and peer-assessment. They called the adapted model a double: ESRU model. The contribution describes the theoretical background and the process of adaptation that has led to the double: ESRU model, and provides classroom excerpts with codes that illustrate the use of the model.
	Rached, E. & Grangeat, M., French teachers' informal formative assessment in the context of inquiry-based learning, International Journal of	This study involves three years of design-based research as part of an educational project. They examined lower secondary school teachers' qualitative Informal Formative assessment (IFA) practices during inquiry-based Science, Mathematics and Technology-Engineering (STEM) lessons. The ESRU (Eliciting, Student response, Recognising and Using phases) model is adapted to analyse IFA practices, while also considering the role played by students. Inquiry dimensions (e.g. conceptual and epistemic) were used to examine the inquiries given priority in these discussions. The results show frequent (>30%) ESRU complete-cycle implementations by most teachers, which is associated with effective IFA practices.

	Science Education, Volume 43, 2021, Issue 3: Developing formative assessment in STEM classrooms, abstract available here	Frequent complete-cycle implementation led to teachers eliciting the same students at different moments of the session with longer consecutive cycles. The dimensions the teachers implement are more epistemic than conceptual. Moreover, students took charge of several ESRU phases.
Formative assessment and dialogue	Ruiz-Primo, M. A., Informal formative assessment: The role of instructional dialogues in assessing students' learning, Studies In Educational Evaluation 37(1):15-24, 2011. Available here	This paper focuses on informal formative assessment and the assessment conversations, or dialogic interactions or exchanges, which continuously happen in the classroom and that are at the centre of informal formative assessment. It is argued that assessment conversations make students' thinking explicit in an unobtrusive manner, and when students' thinking is explicit, it can be examined, questioned, and shaped as an active object of constructive learning. The paper then presents a discussion about the evidence on the effect of assessment conversations on student learning.
	Hansen, G., Formative assessment as a collaborative act. Teachers` intention and students` experience: Two sides of the same coin, or?, Studies in Educational Evaluation, Volume 66, 2020. Available here	This study, conducted in an European higher education institution, explores the value of dialogue as a means of facilitating alignment between the teacher's and student's understanding of a formative assessment practice. The findings argue for the importance of the teachers' efforts to develop a mutual learning dialogue and the active effort and participation by both parties in such formative activities as self-assessment, reflection as feedback and dialogue.
	Hendersen, J. B. et al., How Science Teachers DiALoG Classrooms: Towards a Practical and Responsive Formative Assessment of Oral Argumentation, Journal of Science Education	This study presents lessons learned from an ongoing attempt to conceptualize, develop, and refine a way for teachers to gather formative assessment evidence about classroom argumentation as it happens. The system—named DiALoG (Diagnosing Argumentation Levels of Groups)—includes a digital scoring tool that allows teachers to assess oral classroom argumentation across two primary dimensions: one to capture the Intrapersonal, discipline-specific features of scientific arguments, and another to capture the Interpersonal, group regulatory features of argumentation as a dynamic social act.

	and Technology volume 30, pages 803–815, 2021. Available here	
	Hsu, P. & Liao, Y., Beyond measure: using cogenerative dialogues as a formative assessment to improve PBL science internships, International Journal of Science Education, 2022. Abstrat available here	This study examines how to assess students' learning in project-based learning activities. Looking at high school students' science internships, the authors demonstrated that cogenerative dialogues can serve as a formative assessment to improve teaching and learning in project-based learning activities. In cogenerative dialogues, both instructors and students identified areas for improvement and brainstormed solutions as a team. As a result, students were empowered to speak up with their voices and were willing to take on the responsibility for their learning. The regular cogenerative dialogues became an effective form of formative assessments to improve both the teaching and learning involved in the science internships. The key strategies they identified may serve as a framework to observe how instruction revolutions and feedback are intertwined and how students become engaged in assessing themselves and their peers in formative assessments.
Formative assessment and self-assessment	Gashi-Shatri, Z.F., Zabeli, N., Perceptions of students and teachers about the forms and student self-assessment activities in the classroom during the formative assessment, Journal of Social Studies Education Research, Volume 9, Issue 2, 28, 2018. Available here	The purpose of this study, which involved 725 students from 12 to 18 years old, is to reflect pupils' perceptions about their self-assessment in learning in Kosovo. Participant's response analysis clearly shows that self-assessment helped to develop awareness and metacognitive behaviour among students. Most respondents in questionnaires have found self-assessment as a useful learning tool. The results show that both students' and teachers' perceptions consider that pupils' self-assessment in the classroom is present, but not at a very satisfying level.
	Brown, Gavin T. L.; Harris, Lois R., The Future of Self-Assessment in Classroom Practice: Reframing Self-Assessment as a Core	This research into student self-evaluation raises serious doubts about the quality of self-assessment as an assessment process and identifies conditions which must be met if students' judgments are to be useful, valid, and reliable. This paper recommends that student self-assessment should no longer be treated as an assessment, but instead as an essential competence for self-regulation. As such, a potential curriculum approach that could guide teachers to appropriate use of self-assessment tools is described in the research paper.

	Competency, Frontline Learning Research, v2 n1 p22-30 2014. Available here	
	Hansol Lee, Huy Q. Chung, Yu Zhang, Jamal Abedi & Mark Warschauer, The Effectiveness and Features of Formative Assessment in US K-12 Education: A Systematic Review, Applied Measurement in Education, 33:2, 124-140, 2020, Available here	This is a systematical review of previous empirical studies that conducted formative assessment interventions to improve student learning. Previous meta-analysis research on the overall effects of formative assessment on student learning has been conclusive, but little has been studied on important features of formative assessment interventions and their differential impacts on student learning in the United States' K-12 education system. Analysis of the identified 126 effect sizes from the selected 33 studies representing 25 research projects indicated that supporting student-initiated self-assessment (d = .61) and providing formal formative assessment evidence (e.g., written feedback on quizzes; d = .40) via a medium-cycle length (within or between instructional units; d = .52) were found to enhance the effectiveness of formative assessments.
	Allal, L., Involving primary school students in the co-construction of formative assessment in support of writing, Assessment in Education: Principles, Policy & Practice Volume 28, 2021 - Issue 5-6. Available here	This paper describes the enlargement of the initial conception of formative assessment with reference to constructivist, sociocultural and situated theories of learning and the concept of co-regulation. It reviews research on student involvement in formative assessment practices (self-assessment, peer assessment, whole-class discussions of criteria and exemplars) in the area of writing, with a focus on primary school classrooms. Student participation in the co-construction of formative assessment is illustrated by qualitative observations from a study of a writing activity carried out in grades 5 and 6. The observations are discussed in relation to findings from other research and implications are presented for teacher professional development and for future studies of formative assessment of writing.
	Meusen-Beekman, K. D., Joosten-ten Brinke, D., Boshuizen, H. P. A., Effects of formative assessments to develop	This article presents the results of a formative assessment intervention in writing assignments in sixth grade, examining whether peer and self-assessment would improve self-regulation, motivation and self-efficacy among sixth graders, and whether differential effects exist between formative assessment forms. Participants (N = 695) were exposed to one of three conditions: peer assessment intervention, self-assessment intervention, or a control condition. The results of a multilevel analysis showed that the use

	self-regulation among sixth grade students: Results from a randomized controlled intervention, Studies in Educational Evaluation, Volume 51, 2016, Available here	of formative assessment to develop self-regulation among students was effective for both intervention groups. Also, motivation was affected in both intervention groups. Finally, no significant differences were found between the peer assessment intervention and the self-assessment intervention concerning self-regulation, motivation, or self-efficacy. The implications of these results are discussed.
	Panadero, E. & Alonso-Tapia, J., Self-assessment: Theoretical and Practical Connotations. When it Happens, How is it Acquired and what to do to Develop it in our Students, Electronic Journal of Research in Educational Psychology, 11(2), 551-576, 2013. Available here	In this article two different lines of research concerning self-assessment are analysed (self-regulation and formative assessment) along with a new conceptualization of what self-assessment is. Later the relationship between self-assessment and the use of learning strategies by the students is examined explaining how this skill can be acquired. In the last section how the use of different pedagogic strategies can enhance a successful implementation of self-assessment in classrooms is analysed.
	Brown, G.T.L., Andrade, H.L., Chen, F. (2015) Accuracy in student self-assessment: directions and cautions for research, Assessment in Education: Principles, Policy &	While research on self-assessment has focused on its efficacy in promoting both academic achievement and self-regulated learning, this study looks at issues of validity and accuracy. This article reviews relevant literature from educational psychology and psychometrics to define the need for a better understanding of accuracy in self-assessment as well as to identify possible pitfalls in measuring accuracy that could undermine its effectiveness by, for example, trading the focus on formative feedback for summative scoring or rating. The article concludes with recommendations for the design of research on accuracy in self-assessment.

	Practice, 22:4, 444-457. Available here	
	Barana, A., Marchisio, M., & Sacchet, M., Advantages of Using Automatic Formative Assessment for Learning Mathematics, Communications in Computer and Information Science book series (CCIS,volume 1014), 2019, available here	This paper reports on an experimentation where automatic assessment has been used in a blended modality according to a model of formative assessment and interactive feedback to enhance learning. The experiment involved a total number of 546 students of 8th grade in the town of Turin (Italy). The use of the automatic assessment is shown and exemplified. Data from learning tests, questionnaire and platform usage were analysed and used to show the effectiveness of the interactive materials for enhancing mathematical understanding and self-assessment skills.
	Sanchez, C. E., Atkinson, K. M., Koenka, A. C., Moshontz, H., & Cooper, H. (2017). Self-grading and peer-grading for formative and summative assessments in 3rd through 12th grade classrooms: A meta-analysis. Journal of Educational Psychology, 109(8), 2017. Available here	This research synthesis examined several questions pertaining to the use of self-grading and peer-grading in conjunction with criterion-referenced testing in 3rd- through 12th-grade-level classrooms. The authors investigated (a) the effects of students' participation in grading on subsequent test performance, (b) the difference between grades when assigned by students or teachers, and (c) the correlation between grades assigned by students and teachers. Students who engaged in self-grading and peer-grading performed better on subsequent tests than did students who did not. On average, students did not grade themselves or peers significantly differently than teachers. Further, other moderator analyses and examination of studies suggested that self- and peer-grading practices can be implemented to positive effect in primary and secondary schools with the use of rubrics and training for students in a formative assessment environment.
Formative assessment and peer assessment	Panadero, E., Jonsson, A., Strijbos, JW., Scaffolding Self-Regulated Learning Through Self-	In this chapter, the authors explore the relationship between two Assessment for Learning (AfL) practices, namely, self-assessment and peer assessment, and Self-Regulated Learning (SRL). These AfL practices emphasize student feedback and are both thought to increase student involvement in assessment. They also have evident connections to SRL models of self-regulation and co-regulation. Special attention is given to strategies for the implementation of peer and self-assessment in the

	Assessment and Peer Assessment: Guidelines for Classroom Implementation, 2016. Available here	classroom. In particular, guidelines are presented on teachers' mediating and modelling role in peer and self-assessment, as well as on how to use formative assessment instruments, such as rubrics, scripts, and prompts, in order to promote student involvement in assessment.
	Panadero, E., Jönsson, A., Alqassab, M., Providing formative peer feedback: what do we know?, In: The Cambridge handbook of instructional feedback / [ed] A. Lipnevich & J. K. Smith, Cambridge: Cambridge University Press , 2018, 1, p. 409-431. Available here	The aim of this chapter is to explore the concept of peer feedback, presenting the results of the main dissertations and discussing the key empirical themes that have been investigated.
	Reinholz, D., The assessment cycle: a model for learning through peer assessment, Assessment & Evaluation in Higher Education, 2016. Available here	This paper advances a model describing how peer assessment supports self-assessment. Although prior research demonstrates that peer assessment promotes self-assessment, the connection between these two activities is underspecified. This model, the assessment cycle, draws from theories of self-assessment to elaborate how learning takes place through peer assessment. The model is applied to three activity structures described in the literature to analyse their potential to support learning by promoting self-assessment.
	Double, K.S., McGrane, J.A. & Hopfenbeck, T.N. The Impact of Peer Assessment on Academic Performance: A Meta-analysis of Control Group Studies.	This study presents a meta-analysis (54 studies, k = 141) of studies that evaluated the effect of peer assessment on academic performance in primary, secondary, or tertiary students across subjects and domains. An overall small to medium effect of peer assessment on academic performance was found. The results suggest that peer assessment improves academic performance compared with no assessment and teacher assessment, but was not significantly different in its effect from self-assessment. Additionally, meta-regressions examined the moderating effects of several feedback and educational characteristics (e.g., online vs offline, frequency, education level). Results suggested that the

	Educ Psychol Rev 32, 481–509, 2020. Available here	effectiveness of peer assessment was remarkably robust across a wide range of contexts. These findings provide support for peer assessment as a formative practice and suggest several implications for the implementation of peer assessment in the classroom.
	Leenknecht, M.J.M., Prins, F.J. Formative peer assessment in primary school: the effects of involving pupils in setting assessment criteria on their appraisal and feedback style. Eur J Psychol Educ 33, 101–116, 2018. Available here	This experimental study is aimed at examining the effect of involving pupils in primary education in setting assessment criteria and standards on their appraisal of a peer's work and their peer feedback style. In total, 95 sixth grade pupils from The Netherlands were randomly assigned to one of two conditions. In the experimental group, the pupils first received an exemplar, which was followed by a group discussion about appropriate assessment criteria and standards. In the control group, the pupils provided peer feedback without this discussion. Results showed that the chance that pupils in the experimental group had an authoritative style was three times higher than in the control group. Theoretical and practical implications of the study are discussed.
	Strijbos, JW., Wichmann, A. Promoting learning by leveraging the collaborative nature of formative peer assessment with instructional scaffolds. Eur J Psychol Educ 33, 1–9, 2018. Available here	Although it is increasingly acknowledged by the research community that formative peer assessment is inherently a social endeavour, the collaborative nature is simultaneously the least-explored mechanism. The contributions in this special issue address this gap conceptualising peer assessment and peer feedback as both an individual and a collaborative learning practice. The authors highlight core learning conditions: learner characteristics, domain and task characteristics, and, finally, instructional scaffolds.
	Deiglmayr, A. Instructional scaffolds for learning from formative peer assessment: effects of core task, peer feedback, and dialogue.	This paper looks into instructional scaffolds and the implementation of dialogic features in formative peer assessment. Addressing the proposed benefit of more interactive forms of formative peer assessment, a framework of three dimensions of increasing interactivity is proposed in order to guide future research. These three dimensions comprise the learner's engagement with the core task (low interactivity), the provision and reception of peer feedback (medium interactivity), and the learner's engagement with argumentation, tutoring, and co-construction in dialogue with peers (high interactivity).

	Eur J Psychol Educ 33, 185–198, 2018. Available here	
Formative assessment and well-being (teacher and student)	Ferreira, F., Martinsone, B., & talic, S., Promoting Sustainable Social Emotional Learning at School through Relationship-Centered Learning Environment, Teaching Methods and Formative Assessment, Journal of Teacher Education for Sustainability, vol. 22, no. 1, pp. 21ñ36, 2020. Available here	The main aim of the paper is to present the conceptual model of sustainable integration of social emotional learning (SEL) into everyday teaching practices in every subject. The researchers developed this approach through a project that was based on the premise that assessment of learning at school should go beyond grading students' knowledge and should include practices for observing young peoples' personal growth, social skills, attitudes and other general competences. The relationship between SEL standards (ISBE, 2003) and formative assessment strategies established by Wiliam (2011) is described, providing a detailed description of specific classroom activities. The objective of this approach is, therefore, towards building emotionally strong and flexible individuals who can deal with complex challenges through prosocial behaviour that encourages human prospering.
	Janke M. Faber, Hans Luyten, Adrie J. Visscher, The effects of a digital formative assessment tool on mathematics achievement and student motivation: Results of a randomized experiment, Computers & Education, Volume 106, 2017. Available here	In this study a randomized experimental design was used to examine the effects of a digital formative assessment tool on mathematics achievement and motivation in grade three primary education (n schools = 79, n students = 1808). Experimental schools used a digital formative assessment tool whereas control schools used their regular teaching methods and materials. The tool provides student feedback, feedback to teachers, and adaptive assignments. Multilevel analysis revealed positive effects on student achievement and motivation. Students' intensity of use measurements support the effects found on student achievement and motivation. Furthermore, achievement effects were higher for high-performing students.

	Reed, D. et al, Relationship of Pass/Fail Grading and Curriculum Structure With Well-Being Among Preclinical Medical Students: A Multi-Institutional Study. Academic Medicine: Volume 86 - Issue 11, 2011. Available here	The authors examined relationships among curriculum structures, grading scales, and student well-being. The authors surveyed 2,056 first- and second-year medical students at seven U.S. medical schools. They used the Perceived Stress Scale, Maslach Burnout Inventory, and Medical Outcomes Study Short Form (SF-8) to measure stress, burnout, and quality of life, respectively. The researchers concluded that how students are evaluated has a greater impact than other aspects of curriculum structure on their well-being. Curricular reform intended to enhance student well-being should incorporate pass/fail grading.
Formative assessment and student agency	Clark, I. Formative Assessment: Assessment Is for Self-regulated Learning. Educ Psychol Rev 24, 205–249, 2012. Available here	The article draws from 199 sources on assessment, learning, and motivation to present a detailed decomposition of the values, theories, and goals of formative assessment. This article discusses the extent to which formative feedback actualizes and reinforces self-regulated learning (SRL) strategies among students. Research consistently finds that the self-regulation of cognitive and affective states supports the drive for lifelong learning by enhancing the motivational disposition to learn, enriching reasoning, refining meta-cognitive skills, and improving performance outcomes.
	Fletcher, A.K., Exceeding expectations: scaffolding agentic engagement through assessment as learning, Educational Research, 58:4, 400-419, 2016. Available here	The research examines how scaffolded planning, as part of the forethought phase in the Assessment as Learning (AaL) process, influences self-regulation and student agency in the learning process. 126 students aged 7, 9 and 11, and 7 teachers at an independent primary school in Australia participated in the study. Findings suggested that, in particular, students who were identified by their teachers as low-achieving and/or with poor motivation, were perceived by the teachers as exceeding expectations by demonstrating relatively greater motivation, persistence, effort and pride in their work than would be the case usually. The findings from this formative AaL study suggest that AaL has the potential to help scaffold primary students' development of assessment capabilities.
Formative assessment and parent engagement	Griffith, A. G., How Can Parental Involvement in Formative Assessment Impact Math Achievement in 4th Grade?, Middle Tennessee State	This study investigated how parental involvement in formative assessment impacts maths achievement in 4th grade. By involving parents more in their child's education, the hope was that maths achievement scores would improve. Strategies such as having parents/teachers watch a Parental Involvement in Formative Assessment video and use formative feedback with their child/student were implemented along with other forms of parent/teacher communication such as email, text, phone calls, and notes sent home to parents. It found that parental involvement in formative assessment did not prove to have significance when comparing the focus and control groups. However, parents and teachers have many

	University , 2021, available here	positive things to say about parental involvement in formative assessment such as they think their child is doing better and has a more positive outlook because of it, relationships between parents and teachers are better.
Controlled studies on impact of formative assessment since 2008	Andersson, C., & Palm, T., The impact of formative assessment on student achievement: A study of the effects of changes to classroom practice after a comprehensive professional development programme, Learning and Instruction, Volume 49, 2017. Available here	A random sample of 22 Year 4 teachers in mathematics from a middle-sized Swedish municipality participated in a teacher professional development programme in formative assessment. The study examines the effects on student achievement of the changes in the teachers' formative classroom practice that followed the professional development input. Results show that, after controlling for pre-test scores, the classes in the intervention group significantly outperformed the classes in the control group in a post-test administered one school year after the end of the programme ($p = 0.036$, $d = 0.66$). The study contributes to the understanding of under-studied areas of the impact of professional development in formative assessment, and the impact of teacher practice based on formative assessment conceptualised as a unity of different formative assessment strategies.
	Mehmood,T., Hussain, T., Khalid, M., Azam, R., Impact of formative assessment on academic achievement of secondary school students, 2012. Available here	This study was undertaken to sketch out the impact of formative assessment on academic achievement of secondary school students. The study was experimental in nature and a pre-test/post-test control group design was used. The sample of the study consisted of 60 students of class 10 in Pakistan and these were grouped in control and experimental groups equally. Both groups were pre-tested. The experimental group was taught and assessed with formative assessment during treatment and the control group was not assessed during treatment. It was concluded that formative assessment has positive effects on the achievements of students.
	Yue Yin, R. J. et al., On the Impact of Formative Assessment on Student Motivation, Achievement, and Conceptual Change, Applied Measurement	The researchers designed and embedded formatives assessments within an inquiry science unit. Twelve middle-school science teachers with their students were randomly assigned either to an experimental group (N = 6), provided with embedded formative assessment, or control group (N = 6). Teachers varied significantly as to their impact on student motivation, achievement, and conceptual change. But the impact of the formative assessment treatment on these outcomes was not statistically significant. Variation in both teachers' classroom management and the degree to which they used informal formative

	in Education, 21:4, 335-359, 2008. Available here	assessment, regardless of group, were conjectured as possible reasons for the absence of an overall formative assessment effect.
	Fei Chen & Heidi Andrade, The impact of criteria-referenced formative assessment on fifth-grade students' theater arts achievement, The Journal of Educational Research, 111:3, 310-319, 2018. Available here	The purpose of this study was to examine the effects of criteria-referenced formative assessment (CRFA) on students' achievement in theatre arts. The role of type of task in differentiating the treatment-achievement relationship was explored. The analytical sample included 520 fifth-grade students from 13 schools in New York City. Schools were randomly assigned to the treatment or control group. CRFA had a positive effect on students' achievement on performance tasks (d = 0.25), but no significant effect on students' performance on the analytical constructed response tasks or the theatre vocabulary multiple-choice items.
	Graham, S., Hebert, M., Harris, K. R., Formative Assessment and Writing A Meta-Analysis, The Elementary School Journal Volume 115, Number 4, 2015. Available here	To determine whether formative writing assessments that are directly tied to everyday classroom teaching and learning enhance students' writing performance, researchers conducted a meta-analysis of true and quasi-experiments conducted with students in grades 1 to 8. They found that feedback to students about writing from adults, peers, self, and computers statistically enhanced writing quality, yielding average weighted effect sizes of 0.87, 0.58, 0.62, and 0.38, respectively. They did not find, however, that teachers' monitoring of students' writing progress meaningfully enhanced students' writing. The findings from this meta-analysis provide support for the use of formative writing assessments that provide feedback directly to students as part of everyday teaching and learning.